REMARKS

In an office action dated January 13, 2003, claims 19-36 have been rejected under 35 U.S.C. §103. In response, Applicants have amended claim 19 and 28-36, cancelled claim 21, and added new claims 37-38. Presently, claims 19, 20, and 22-38 are pending in the application.

Support for Amendments to Claims

Support for the amendment to claim 19 can be found on page 8, lines 5-6 of the application.

Support for new claim 37 can be found on page 7, lines 13-15 of the application.

Support for new claim 38 can be found on page 8, lines 5-7 of the application.

Rejections Under §103(a)

Claims 19-27 have been rejected under §103(a) as being unpatentable over Lotzgesell in view of Ewing or WO 97/04167 to Wikstrom.

The Examiner recognizes that Lotzgesell does not disclose the use of divalent copper ions or a starch having 95 wt.% of amylopectin. However, the Examiner contends that because Ewing allegedly discloses using divalent copper ions in processes for oxidizing starches and Wikstrom allegedly discloses amylopectin potato starch having an excess of 95 wt.% amylopectin being oxidized with hydroperoxide, one of ordinary skill in the art would be motivated to combine the teachings of Lotzgesell, Ewing and Wikstrom and arrive at the present invention. Applicants respectfully disagree.

According to the Examiner, Lotzgesell discloses a process for oxidizing starch using hydrogen peroxide in combination with heavy metal catalysts, including copper.

The Examiner contends that Tables I and II of Lotzgesell suggest the amount of catalyst recited in the present claims. Tables I and II of Lotzgesell disclose amounts of catalyst in a range from 37**ppm** to 350**ppm**.

The present claims recite catalyst in an mount from about 5**ppb** to about 5000**ppb** based on dry substance of starch. Applicants respectfully bring the Examiner's attention to the sizable difference between Lotzgesell's disclosed range (measured in parts per million (ppm)) as compared to the much smaller amounts recited in the present claims (parts per billion(ppb)).

On page 7 of the application, it is explained that one of the most important advantages of the present invention is that very small amounts of catalyst are used. This is advantageous because, for example, the process water ends up having an acceptably low amount of metal ions and can therefore be disposed of conveniently without harming the environment.

Lotzgesell does not disclose the amount of catalyst in the present claims.

According to the Examiner, because Wikstrom allegedly discloses that the amount of oxidizing agent required to degrade the amylopectin in starch is approximately 50% lower than the amount required to degrade traditional potato starch, it would have been obvious to substitute the starch used in Lotzgesell with starch having an amylopection content of at least 95 wt.%. Applicants respectfully disagree.

Wikstrom provides two examples of oxidation reactions of conventional potato starch utilizing sodium hypochlorite without any other oxidizing agent. Wikstrom does not disclose using hydrogen peroxide to oxidize potato starch. This is crucial because oxidation of potato starch with sodium hypochlorite compared with hydrogen peroxide results in completely different derivatives.

As demonstrated in Table 3 of the present application, oxidation of conventional potato starch with hydrogen peroxide gives very unstable derivatives. For example, even at

90°C a thickening effect is observed. See bottom of page 15 through page 16 of the application.

As a result of the present invention, Applicants have discovered that oxidation of amylopectin potato starch (i.e. at least 95 wt.% amylopectin) using hydrogen peroxide and a copper catalyst provides unexpectedly superior results. There is simply no suggestion or motivation in Wikstrom to use hydrogen peroxide in combination with the claimed amount of catalyst to oxidize amylopectin potato starch.

Ewing actually teaches away from using small amounts of catalyst. In column 3, lines 3-10, Ewing explains that about 0.015 percent copper sulfate is preferred and that at concentrations below about 0.008 percent, the efficiency of the oxidation process is reduced. Also, at levels above 0.03 percent, the temperature stability of the starch past is reduced.

In order to establish a *prima facie* case of obviousness, one of the criteria to be met is that the prior art references, when combined, must teach or suggest all of the claim limitations. See MPEP §2142.

Applicants have demonstrated the importance of using of substantially less catalyst in conjunction with hydrogen peroxide to oxidize amylopectin potato starch, and obtain stable, starch derivatives having low viscosity, as compared to conventional starches

Upon combining the teachings of Lotzgesell, Wikstrom and Ewing, all of Applicants claimed limitations are not taught or suggested. Therefore, based on the foregoing discussion, Applicants claimed invention is not obvious over Lotzgesell in view of Wikstrom and Ewing.

Applicants respectfully request that the rejection of claims 19-27 under §103 based on Lotzgesell in view of Wikstrom and Ewing be reconsidered and withdrawn.

Claims 28, 29 and 31-33 have been rejected under §103(a) as being unpatentable over Wikstrom. Additionally, claims 30 and 34-36 have been rejected under §103(a) as being unpatentable over EP 0799837 to Huizenga.

According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time of the present invention to employ an amylopectin potato starch having at least 95 wt.% amylopectin of Wikstrom or Huizenga in view of their closely related structures and resulting expectation of similar finishing properties. Applicants respectfully disagree.

As discussed above, the process of the claimed invention provides unexpected, superior results as compared to the products disclosed in Wikstrom and Huizenga. For example, Table 1 of the application compares the resulting viscosities of conventional starches and amylopectin potato starch (APS) using amounts of catalyst within the range of the present claims. After twenty four hours, the APS was the only stable solution. The conventional starches resulted in either viscosities too high to measure (corn and tapioca)or a gel (potato).

Neither Wikstrom or Huizenga disclose oxidizing an amylopectin starch using hydrogen peroxide and a catalyst in the minute amount recited in the claims. Applicants have demonstrated above the superiority of an oxidized starch obtained by the claimed process.

An oxidized starch product obtained by the claimed process could certainly be distinguished from a starch product of Wikstom or Huizenga because of the superior properties (e.g. viscosity) of the claimed starch product as compared to the starches disclosed in Wikstrom and Huizenga.

Thus, Applicants respectfully request that the rejection of claims 28-36 under §103 based on Wikstrom and Huizenga be reconsidered and withdrawn.

In light of the foregoing amendments and remarks, Applicants respectfully submit that the application is now in condition for allowance. If the Examiner believes a telephone

discussion with the Applicant's representative would be of assistance, she is invited to contact the undersigned at her convenience.

Respectfully submitted,

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